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EXAMINER	
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ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 032904

Application Number: 10/071,341
Filing Date: February 08, 2002
Appellant(s): RYU ET AL.

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Kenneth H. Johnson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on January 23, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1-3, 7, and 8 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

2,314,435	ALLENDER	03-1943

4,520,214 VORA 05-1985

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 1-3, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allender et al. (US 2,314,435) in view of Vora (US 4,520,214).

The Allender reference discloses a process for upgrading a C_4 hydrocarbon stream. The process comprises introducing the hydrocarbon stream that contains isobutane and normal butane into a separation zone such as a fractional distillation column separate the isobutane from the normal butane. A portion of the normal butane is then passed to a dehydrogenation unit in which normal butene is produced. Another portion of the normal butane is passed to an isomerization unit in which isobutane is produced. The isobutane recovered from the separation zone is passed along with the normal butene produced in the dehydrogenation zone to an alkylation zone to form an alkylate. This alkylate would necessarily contain a branched alkane such as isooctane. See page 2, left column, line 69 through page 3, left column, line 62.

The Allender reference does not disclose the selective hydrogenation of dienes in the dehydrogenation zone effluent and does not disclose utilizing a C_5 stream as in claim 8.

The Vora reference discloses the selective hydrogenation of dienes contained in a dehydrogenation zone effluent stream. See column 1, lines 7-19; column 2, line 37 through column 3, line 20; and column 4, lines 41-53.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Allender process by selectively hydrogenating dienes

in the dehydrogenation zone effluent as suggested by Vora because dienes that react downstream to produce undesired products will be removed thereby limiting the production of undesired products.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Allender by utilizing a C_5 stream instead of the disclosed C_4 stream because a C_5 stream would be expected to be similarly converted to useful products in the process of Allender since a C_5 stream is chemically and physically similar to the disclosed C_4 stream.

(11) Response to Argument

The argument that the Vora reference discloses selective hydrogenation of dienes contained in a dehydrogenation zone effluent stream within the dehydrogenation zone (i.e., in situ selective hydrogenation) whereas the present claims all recite that the effluent from the dehydrogenation is treated to selectively hydrogenate the dienes in a separate hydrogenation step is not persuasive. An examination of the figure of Vora indicates that the selective hydrogenation reactor (17) is separate from the dehydrogenation reactor. Therefore, the examiner maintains that, as claimed, the selective hydrogenation of Vora selectively hydrogenates the effluent from a dehydrogenation zone.

The argument that there is no motivation to combine the Allender and Vora references is not persuasive because Vora clearly discloses in column 4, lines 41-53 that the presence of diolefins (i.e., dienes) in a dehydrogenation effluent is undesirable and cites prior art in column 1, lines 43-63 that more specifically discloses that diolefins in an alkylation feed stream are undesirable. Vora also discloses in column 4, lines 17-30 that diolefins are common by-products

in dehydrogenation processes that produce mono-olefins (i.e., alkenes). Therefore, the examiner asserts that one of ordinary skill in the art would expect the dehydrogenation zone effluent of Allender to contain some diolefins based on the teachings of Vora and that one of ordinary skill in the art would be motivated to selectively hydrogenate these diolefins to eliminate these undesirable compounds.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,
Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
April 2, 2004

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